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Column Editor

summary

A dynamic warm-up can improve fitness performance and enhance motivation for physical education

Even though there is little scientific evidence documenting the injury-reducing and performance-enhancing potential of static stretching (8), warm-up procedures that include static stretching are an accepted practice in most physical education classes and youth sports programs. Although regular static stretching can enhance flexibility and reduce muscle tension, recent findings suggest that an acute bout of static stretching can reduce strength or power performance in children and teenagers (1, 2, 5, 7). Indeed, the President's Council for Physical Fitness and Sports noted that static stretching might compromise performance (3).

Because the current practice of warm-up static stretching has been based more on intuition than on scientific evidence, there has been a growing interest in warm-up procedures for youth that involve the performance of dynamic movements designed to elevate core body temperature, enhance motor

Dynamic Motivation With Skills and Drills

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unit excitability, improve kinesthetic awareness, maximize active ranges of motion, and develop fundamental movement skills by reinforcing critical movement patterns (1, 2, 5, 7). This type of warm-up protocol is referred to as dynamic exercise and typically includes low-, moderate-, and high-intensity hops, skips, and jumps and various movement-based exercises for the upper and lower body. It is likely that moderate- to high-intensity movements performed during the warm-up period may excite the neuromuscular system, which in turn may allow for greater explosive effort during subsequent exercises (6).

Physical education teachers and youth coaches should consider the potential impact of warm-up protocols on motivation and performance. A well-designed warm-up can set the tone for the class or practice session and establish the desired tempo for upcoming activities. If the warm-up is slow and monotonous (e.g., walking or jogging a lap or two around the gymnasium), then motivation and performance during the main part of class or practice may be less than expected. Conversely, if the warm-up is characterized by a variety of dynamic movements that are

exciting and challenging, motivation and performance during the main part of class or practice may meet or exceed expectations. Unlike low-intensity aerobic exercise and static stretching, performance of dynamic movements during the warm-up period not only excites the neuromuscular system for the demands of physical education class or sports practice, but also provides an opportunity for boys and girls to learn and practice movement patterns that can carry over to other physical activities and sports. Moreover, because motivation to participate in physical activity involves the exploration of goal-setting, concentration, facilitation of hope, and team-building exercises (4), a well-designed dynamic warm-up characterized by cooperative and successful experiences can be a useful tool to spark an interest in physical activity, which is an important public health objective.

Based on the available evidence (1, 2, 5, 7), as well as impressions from physical education teachers and youth coaches who report that many students do not enjoy traditional static stretching, it seems reasonable to suggest that students should perform dynamic exercises during the warm-up period and static

stretching during the cool-down period, when youth need time to recover from the main part of class or practice. We recognize that flexibility is an important health-related component of fitness and therefore include both dynamic and static protocols in our classes and practice sessions.

We begin each class or practice session with a 10-minute dynamic warm-up that typically consists of 10–12 drills (see Table 1). We start with standing drills in place (about 10–15 repetitions) and progress to dynamic drills that involve walking, lunging, or running. This approach allows the teacher or coach to effectively manage the class while introducing key concepts related to dynamic warm-up procedures (e.g., proper technique, spatial awareness, and body control). Following the standing drills, students perform each dynamic movement for about 10 yd, rest for about 5–10 seconds, and then repeat the same exercise as they return to the starting point. Because most youth see little value in prolonged periods of aerobic exercise, a dynamic warm-up is more consistent with how children naturally move (i.e., short bursts of moderate- to high-intensity physical activity interspersed with brief recovery periods as needed). Moreover, equipment is not needed, and this type of warm-up can be performed in a relatively small space.

In summary, it is difficult to imagine that motivation and performance in boys and girls would be enhanced following an acute bout of static stretching. This is not to suggest that children and teenagers should avoid regular static stretching, but rather that physical education teachers and youth coaches should consider the immediate impact of warm-up static stretching on motivation and performance. Not only are warm-up dynamic movements more enjoyable to perform than static stretching, but recent findings suggest that this type of movement preparation better prepares boys and girls for the

Table 1
Sample Dynamic Warm-Up Routine

Exercise	Description
1. Jumping jacks	While moving feet, progress from low jacks (lifting arms from hips to shoulder level), to high jacks (lifting arms from shoulder level to overhead), and finally to full jacks (lifting arms from hips to overhead).
2. Standing skips	Skip in place with elbows at 90° and a swift knee drive.
3. Standing flutters	Stand with both arms extended above head and feet shoulder width apart. Move left arm and right leg backwards while maintaining an erect body position; return to starting position and perform with opposite limbs. Keep arms and legs extended during the movement.
4. Standing toe touches	Stand with arms extended in front of the body. Lift 1 extended leg towards the extended arms and then return to starting position. Alternate with other leg.
5. Hip rotations	While hopping in place, turn toes in/heels out, then toes out/heels in.
6. Trunk rotations	With hands clasped behind head, turn hips to the right and then to the left as you hop forward. Focus on trunk rotation and an erect body position during this movement.
7. Side shuffles	From a standing side stance with feet hip width apart, hop and land with feet shoulder width apart and body lowered to semisquat position. While maintaining semisquat position, move laterally by taking a short lead step followed by a short secondary step.
8. High knee skips	Rapidly skip forward while focusing on knee lift, arm action, and reduced ground time.
9. Kick-aways	While jogging forward, kick heels backwards with extended leg, then cycle heels towards buttocks while moving forward.
10. Run and go	From a standing position, lean forward as you begin to run to the 5-yd mark, and then sprint through the 10-yd mark. Focus on arm action, knee height, and accelerating as fast as possible.
11. Run and stop	From a standing position, lean forward as you begin to sprint through the 5-yd mark and then stop at the 10-yd mark. Focus on decelerating by lowering your body, bending your knees, and increasing foot contacts (i.e., chop feet several times).

demands of physical education class and sports training. ♦

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